

AMENDMENTS TO THE CLAIMS

1.(Original) An electric generating system by gasification of combustibles, characterized in that combustibles are gasified to produce gas, and the produced gas is then used in a chemical reaction to generate electricity.

2.(Original) An electric generating system by gasification of combustibles, characterized in that combustibles are gasified to produce gas, and the produced gas is used in a fuel cell to generate electricity.

3.(Original) An electric generating system by gasification of combustibles, characterized in that combustibles are gasified in a fluidized-bed furnace to produce gas, and the produced gas is then used in a fuel cell to generate electricity.

4.(Original) An electric generating system by gasification of combustibles, characterized in that combustibles are gasified to produce gas, and the produced gas is reformed, and the reformed gas is then used in a fuel cell to generate electricity.

5.(Original) An electric generating system by gasification of combustibles, characterized in that combustibles are gasified to produce gas, and the produced gas is then used in a fuel cell to generate electricity, while waste heat produced in said fuel cell is used as a heat source for the gasification.

6.(Original) An electric generating system by gasification of combustibles, characterized in that combustibles are gasified to produce gas, and the produced gas is

used in a fuel cell to generate electricity, while exhaust gas discharged from said fuel cell is introduced into the gasification process to utilize the exhaust gas for the gasification.

7.(Original) An electric generating system by gasification of combustibles, characterized in that combustibles are gasified in an integrated type fluidized-bed gasification furnace having a gasification chamber, a char combustion chamber, and a heat recovery chamber in one furnace to produce gas, and the produced gas is then used in a fuel cell to generate electricity.

8.(Previously Presented) An electric generating system by gasification of combustibles according to claim 1, characterized in that the combustibles are wastes and/or coal.

9.(Previously Presented) An electric generating system by gasification of combustibles according to claim 1, characterized in that the gasification process comprises a low-temperature gasification process and a high-temperature gasification process.

10.(Original) An electric generating system by gasification of combustibles according to claim 9, characterized in that the low-temperature gasification process is operated at a temperature of 400 to 1,000°C .

11.(Original) An electric generating system by gasification of combustibles according to claim 9, characterized in that the high-temperature gasification process is operated at a

temperature of 1,000 to 1,500°C.

12.(Previously Presented) An electric generating system by gasification of combustibles according to claim 1, characterized in that the gasification process is operated at a temperature of 400 to 1,000°C.

13.(Previously Presented) An electric generating system by gasification of combustibles according to claim 1, characterized in that the gasification process is operated at atmospheric pressure or higher pressure.

14.(Previously Presented) An electric generating system by gasification of combustibles according to claim 1, characterized in that a gasifying agent in the gasification process comprises one of air, oxygen, carbon dioxide, and steam, or a combination of two or more of them.

15.(Original) An electric generating system by gasification of combustibles according to claim 4, characterized in that the produced gas is reformed in the temperature range of 700 to 800°C in the presence of a catalyst.

16.(Previously Presented) An electric generating system by gasification of combustibles according to claim 1, characterized in that exhaust gas after the generation of electricity is introduced into the gasification process to utilize the exhaust gas for the gasification.

17.(Previously Presented) An electric generating system by gasification of

combustibles according to claim 1, characterized in that the gas produced in the gasification process is pressurized and then supplied into the fuel cell to generate electricity.

18.(Original) An electric generating system by gasification of combustibles according to claim 4, characterized in that the produced gas is reformed by low-temperature plasma.

19.(Previously Presented) An electric generating system by gasification of combustibles according to claim 1, characterized in that the gas produced in the gasification process is cooled to 650°C or below and then introduced into the fuel cell to generate electricity.

20.(Previously Presented) An electric generating system by gasification of combustibles according to claim 6, characterized in that the exhaust gas, which is discharged from the fuel cell and introduced into the gasification process, is exhaust gas discharged from the negative electrode (anode) side.

21.(Previously Presented) An electric generating system by gasification of combustibles according to claim 1, characterized in that the gasification process is carried out in a fluidized-bed furnace.

22.(Previously Presented) An electric generating system by gasification of combustibles according to claim 3, characterized in that the gasification process is carried out in an integral fluidized-bed gasification furnace having, in one furnace, a gasification chamber, a char combustion chamber, and a heat recovery chamber.

23.(Original) An electric generating system by gasification of combustibles according to claim 21, characterized in that the exhaust gas discharged from the fuel cell is utilized as a fluidizing gas in the fluidized-bed furnace.

24.(Original) An electric generating system by gasification of combustibles according to claim 9, characterized in that, in the high-temperature gasification process, ash content contained in the combustibles is discharged as molten slag.

25.(Original) An electric generating system by gasification of combustibles according to claim 9, characterized in that the gas produced in the high-temperature gasification process, together with molten slag, is quenched.

26.(Original) An electric generating system by gasification of combustibles according to claim 9, characterized in that the exhaust gas discharged from the fuel cell is utilized as a gasifying agent in the low-temperature gasification process and/or the high-temperature gasification process.

27.(Previously Presented) An electric generating system by gasification of combustibles according to claim 2, characterized in that the fuel gas is passed through a CO shift process provided downstream of the reforming process and then introduced into the fuel cell.

28.(Previously Presented) An electric generating system by gasification of combustibles according to claim 2, characterized in that the fuel gas is passed through

a CO shift process and is further passed through a CO removal process, and then introduced into the fuel cell, the CO shift process and the CO removal process being provided downstream of the reforming process.

29.(Previously Presented) An electric generating system by gasification of combustibles according to claim 2, characterized in that the fuel gas is passed through a CO shift process and a CO removal process, and further treated through a hydrogen absorbing alloy or a hydrogen-permeable membrane to prepare pure hydrogen or enriched hydrogen which is then introduced into the fuel cell, the CO shift process and the CO removal process being provided downstream of the reforming process.

30.(Previously Presented) An electric generating system by gasification of combustibles according to claim 2, characterized in that the temperature of the fuel gas introduced into the fuel cell is lower than the operating temperature of the gasification process.

31.(Original) An electric generating system by gasification of combustibles according to claim 30, characterized in that the temperature of the fuel gas introduced into the fuel cell is around 100°C.

32.(Original) An electric generating system by gasification of combustibles according to claim 30, characterized in that the temperature of the fuel gas introduced into the fuel cell is in the range of 600 to 700°C.

33.(Previously Presented) An electric generating system by gasification of

combustibles according to claim 2, characterized in that the gas produced in the gasification process is reformed by low-temperature plasma.

34.(Previously Presented) An electric generating system by gasification of combustibles according to claim 1, characterized in that, prior to the introduction of the combustibles into the gasification process, the combustibles are squeezed to lower water content of the combustibles.

35.(Original) An electric generating system by gasification of combustibles according to claim 34, characterized in that the squeeze of raw materials is introduced into a waste heat boiler provided downstream of the gasification process and/or an exhaust gas discharged from the positive electrode (cathode) in the fuel cell to be dried.

36.(Original) An electric generating system by gasification of combustibles according to claim 34, characterized in that the squeeze of raw materials is dried by utilizing heat obtained in cooling the gas produced in the gasification process and/or waste heat generated from the fuel cell.

37.(Original) An electric generating system by gasification of combustibles according to claim 17, characterized in that the fuel gas supplied into the fuel cell has a pressure of 0.2 to 1.0 MPa.

38.(Original) An electric generating system by gasification of combustibles according to claim 22, characterized in that an exhaust gas discharged from the negative electrode (anode) in the fuel cell is introduced into the gasification chamber in the integral

fluidized-bed gasification furnace and an exhaust gas discharged from the positive electrode (cathode) is introduced into the char combustion chamber in the integral fluidized-bed gasification furnace, the introduced exhaust gases being utilized as a fluidizing gas in the gasification chamber and the char combustion chamber.

39.(Previously Presented) An electric generating system by gasification of combustibles according to claim 3, characterized in that a reforming catalyst is used as a part or the whole of a fluidized medium in the fluidized bed.

40.(Previously Presented) An electric generating system by gasification of combustibles according to claim 1, characterized in that the gas produced in the gasification process is introduced into a fixed-bed reactor or a moving-bed reactor packed with a reforming catalyst and reformed.

41.(Original) An electric generating system by gasification of combustibles according to claim 40, characterized in that the material to be packed into the fixed-bed reactor or the moving-bed reactor comprises CaO.

42.(Previously Presented) An electric generating system by gasification of combustibles according to claim 1, characterized in that the produced gas discharged from the low-temperature gasification furnace is separated into a solid component and a gas component in a dust collector in the temperature range of 400 to 650°C and only the gas component is supplied to electric generating equipment.

43.(Original) An electric generating system by gasification of combustibles according to

claim 9, characterized in that both a low-temperature gasification furnace used in the low-temperature gasification process and a high-temperature gasification furnace used in the high-temperature gasification process are operated under pressure and the produced gas is used to operate the electric generating equipment, a gas turbine, and a steam turbine, thereby performing three-stage combined cycle power generation.

44.(Previously Presented) An electric generating system by gasification of combustibles according to claim 1, characterized in that, prior to power generation utilizing the produced gas, the produced gas is stored in load leveling means for the gasification furnace such as a hydrogen absorbing alloy or a gas holder and supplied to electric generating equipment according to the load of power generation.

45.(Previously Presented) An electric generating system by gasification of combustibles, characterized in that combustibles are gasified by a low-temperature gasification process and then a high-temperature gasification process to produce gas, and the produced gas is then used in a chemical reaction to generate electricity.

46.(Previously Presented) An electric generating system by gasification of combustibles, characterized in that combustibles are gasified by a low-temperature gasification process and then a high-temperature gasification process to produce gas, and the produced gas is used in a fuel cell to generate electricity.

47.(Previously Presented) An electric generating system by gasification of combustibles, characterized in that combustibles are gasified by a low-temperature gasification process in a fluidized-bed furnace and then by a high-temperature gasification process to produce gas, and the produced gas is then used in a fuel cell to generate electricity.

48.(Previously Presented) An electric generating system by gasification of combustibles, characterized in that combustibles are gasified by a low-temperature gasification process and then a high-temperature gasification process to produce gas, and the produced gas is used in a fuel cell to generate electricity, while exhaust gas discharged from said fuel cell is introduced into the low-temperature gasification process or the high-temperature gasification process to utilize the exhaust gas for the gasification.

49.(Previously Presented) An electric generating system by gasification of combustibles, characterized in that combustibles are gasified in an integrated type fluidized-bed gasification furnace having a gasification chamber and a char combustion chamber in one furnace to produce gas, and the produced gas is then used in a fuel cell to generate electricity.

50.(New) A gas reforming method comprising:

gasifying combustibles to produce a gas in a gasification process;
reforming said gas produced in said gasification process using catalyst to produce a fuel gas in a reforming process; and
recovering the catalytic activity of said catalyst by utilizing heat generated by combustion of char produced in said gasification process.

51.(New) A gas reforming apparatus comprising:

a gasification furnace for gasifying combustibles to produce a gas; and
a fuel reformer for reforming said gas produced in said gasification furnace using catalyst to produce a fuel gas;
wherein the catalytic activity of said catalyst is recovered by utilizing heat generated by combustion of char produced in said gasification furnace.

52.(New) A gas reforming apparatus comprising:

a gasification furnace of gasifying combustibles to produce a gas;
a fuel reformer for reforming said gas produced in said gasification furnace using catalyst to produce a fuel gas;
wherein said gasification furnace comprises a gasification chamber for gasifying said combustibles to produce said gas and a char combustion chamber for combusting

char produced in gasification of said combustibles, said gasification chamber and said char combustion chamber having a fluidized bed containing catalyst; and

wherein said combustibles are gasified to produce said gas in said gasification chamber, and the produced gas is reformed by said catalyst, and said catalyst degraded by said reforming of said produced gas is introduced into said char combustion chamber and is heated to recover the catalytic activity of said catalyst in said char combustion chamber, and then said catalyst having the recovered catalytic activity is returned to said gasification chamber.

53.(New) A gas reforming method comprising:

a gasification furnace for gasifying combustibles to produce a gas; and

a fuel reformer for reforming said gas produced in said gasification furnace using catalyst to produce a fuel gas;

wherein said gasification furnace has a fluidized bed containing catalyst; and

wherein said combustibles are gasified to produce said gas in said gasification furnace, and the produced gas is reformed by said catalyst, and said catalyst degraded by said reforming of said produced gas is heated to recover the catalytic activity of said catalyst, and then said catalyst having the recovered catalytic activity is effectively utilized.